

TRANSLATION:

(19) Republic of France

National Institute of  
Industrial Property  
  
Paris

(11) Publication N .: 2,684,633 A1  
(To be used only for ordering  
copies)

(21) National Registry No.: 91/15,094

(51) Intl. Cl.<sup>s</sup>: B 62 D 65/00  
21/00  
F 16 S 3/00

(12)

**PATENT APPLICATION**

(22) Filing Date of the Application: December 5, 1991

(30) Convention Priority Data: --

(43) Publication Date of Unexamined  
Document on Which No Grant Has  
Taken Place: June 11, 1993, Bulletin 93/23

(56) List of Documents Cited  
in the Preliminary Search  
Report: See attached

(60) References to Other Related  
National Documents: --

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AUTOMOBILE CITROEN, FR

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(73) Grantee: --

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(54) Title of the Invention:

PROCESS FOR PLUGGING A HOLLOW BODY WITH AN OVERALL ELONGATED SHAPE,  
SUCH AS IN PARTICULAR A SIDEPiece OR CROSSPIECE  
OF AN AUTOMOTIVE VEHICLE

(57) Abstract:

The invention proposes a process for plugging a hol-  
low body with an overall elongated shape, such as in par-  
ticular a sidepiece (10) or a crosspiece of an automotive

vehicle, into which a filler product such as an insulating foam must be injected, characterized by the fact that it consists in placing an inflatable bag (18) inside the hollow body (10) in the deflated state, then inflating the bag (18) until it takes on, in an airtight manner, the inside contour of the section of the hollow body (10, 16) into which it was placed, and injecting the filler product on one side or the other of the bag.

The present invention concerns a process for filling a hollow body with an overall elongated shape, such as in particular a sidepiece or crosspiece of an automotive vehicle.

In order to solve the problems of airtightness with respect to dust or liquid, or acoustic insulation problems, it is sometimes necessary to inject a filler product into such hollow bodies, such as a foam, an anticorrosion coating, etc.

It is most often desirable to limit the area containing the product to a single longitudinal section of the hollow body.

When the hollow body is open at one of its longitudinal ends, as in the case of a sidepiece of an automotive vehicle, it is also sometimes necessary to limit the quantity of product injected by plugging the ends.

According to known techniques, the means of plugging hollow bodies are generally plugs or intermediate partitions welded into the hollow bodies.

The positioning of such parts in the hollow body is complex, in particular because of accessibility problems. Because of this, the production time and costs of the hollow bodies are increased significantly.

In order to remedy these drawbacks, the invention proposes a plugging process characterized by the fact that it consists in placing an inflatable bag inside the hollow body in the deflated state, then inflating the bag until it takes on, in an airtight manner, the inside contour of the section of the hollow body into which it was placed, and then injecting the filler product on one side and/or the other of the bag.

According to other characteristics of the invention:

-- the placement step consists in making an opening for introducing the bag in the wall of the hollow body, then introducing the bag through this opening;

-- the inflation step consists in filling the bag with a liquid or gas fluid.

The invention also proposes an inflatable bag for implementing the process, characterized by the fact that it has an inflation nozzle which projects through the opening for introducing the bag.

Other characteristics and advantages of the invention will become apparent upon reading the detailed description below with reference to the attached drawings, in which:

-- Figure 1 is a perspective view of a section of a hollow body plugged in accordance with the process according to the invention;

-- Figure 2 is a cross section along line 2-2 of Figure 1.

Figure 1 shows a structural sidepiece 10 of an automotive vehicle made by welding together two complementary parts 12 and 14 which, in the assembled position illustrated in Figure 1, form a hollow interior space 16.

In accordance with the invention, this hollow interior space 16 is plugged in an intermediate section of the sidepiece 10 by an inflatable bag 18.

For this purpose, the side wall 20 of the sidepiece 10 has an opening 22 through which the bag 18 has been introduced inside the sidepiece, in the deflated state.

The inflatable bag 18 has an inflation nozzle 24 which makes it possible to inflate it by introducing a liquid or gas fluid, after it has been placed in the sidepiece 10.

At the end of the inflation operation, the nozzle 24 is plugged, by a

plug or by hot-welding the walls of the nozzle 24.

By tightly plugging the section of the sidepiece, the bag constitutes a partition making it possible to contain the filler product which is then injected, in a known manner, on one side or the other of the bag. It is thus possible, for example, to form a free filling space between two bags introduced at a suitable distance, or to close off at least one end of a sidepiece.

The steps of inflating or filling the bag 18 and plugging the nozzle 24 can be easily integrated into an automated sidepiece production cycle having a step for filling the hollow interior space.

The airtightness of the bag 18 and its integrity must be guaranteed until the end of the step where the product is injected into the hollow body, and in particular until its solidification or hardening. After this step, the bag 18 remains in place in the sidepiece, but in principle it is no longer functional.

## CLAIMS

1. Process for plugging a hollow body with an overall elongated shape, such as in particular a sidepiece (10) or crosspiece of an automotive vehicle, into which a filler product such as an insulating foam must be injected, characterized by the fact that it consists in placing an inflatable bag (18) inside the hollow body (10) in the deflated state, then inflating the bag (18) until it takes on, in an airtight manner, the inside contour of the section of the hollow body (10, 16) into which it was placed, and then injecting the filler product on one side and/or the other of the bag.

2. Process according to Claim 1, characterized by the fact that the placement step consists in making an opening (22) in the wall (14) of the hollow body for introducing the bag (18), then introducing the bag (18) through this opening (22).

3. Process according to one of Claims 1 or 2, characterized by the fact that the step of inflating the bag (18) consists in filling it with liquid or gas fluid.

4. Inflatable bag (18) for implementing the process according to any of the preceding claims, characterized by the fact that it has an inflation nozzle (24).

5. Inflatable bag according to Claim 4 taken in combination with Claim 2, characterized by the fact that the inflation nozzle (24) projects out of the hollow body (10) through the opening (22) for introducing the bag.

KEY TO SEARCH REPORT: Janvier = January; Septembre = September; abrégé = abstract; and Août = August.

**Method for sealing off a hollow body of elongate overall shape, such as, particularly, a side rail or cross member of a motor vehicle**

Patent Number: FR2684633  
Publication date: 1993-06-11  
Inventor(s): CHRISTIAN VUILLEMEY  
Applicant(s): PEUGEOT (FR); CITROEN SA (FR)  
Requested Patent: ☐ FR2684633  
Application Number: FR19910015094 19911205  
Priority Number(s): FR19910015094 19911205  
IPC Classification: B62D21/00; B62D65/00; F16S3/00  
EC Classification: B62D21/16  
Equivalents:

**Abstract**

The invention proposes a method for sealing off a hollow body of elongate overall shape, such as, in particular, a side rail (10) or cross member of a motor vehicle, into which a filling product, such as an insulating foam, is to be injected, characterised in that it consists in installing, in the hollow body (10), an inflatable bladder (18) in the deflated state, then in inflating the bladder (18) until it matches, in sealed fashion, the internal contour cross section of the hollow body (10, 16) in which it has been installed and in

injecting the filling product on one side of the said bladder or the other.



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①9 RÉPUBLIQUE FRANÇAISE  
INSTITUT NATIONAL  
DE LA PROPRIÉTÉ INDUSTRIELLE  
PARIS

①1 N° de publication :  
(à n'utiliser que pour les  
commandes de reproduction)

2 684 633

②1 N° d'enregistrement national :

91 15094

⑤1 Int Cl<sup>8</sup> : B 62 D 65/00, 21/00, F 16 S 3/00

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## DEMANDE DE BREVET D'INVENTION

A1

②2 Date de dépôt : 05.12.91.

③0 Priorité :

⑦1 Demandeur(s) : Société dite: AUTOMOBILES  
PEUGEOT — FR et Société dite: AUTOMOBILES  
CITROEN — FR.

⑦2 Inventeur(s) : Vullemey Christian.

④3 Date de la mise à disposition du public de la  
demande : 11.06.93 Bulletin 93/23.

⑤6 Liste des documents cités dans le rapport de  
recherche : *Se reporter à la fin du présent fascicule.*

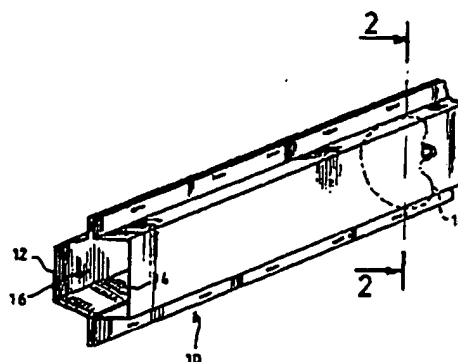
⑥0 Références à d'autres documents nationaux  
apparentés :

⑦3 Titulaire(s) :

⑦4 Mandataire : Cabinet Lavoix.

⑤4 Procédé d'obturation d'un corps creux de forme générale allongée, tel que notamment un longeron ou un  
traverse de véhicule automobile.

⑥7 L'invention propose un procédé d'obturation d'un  
corps creux de forme générale allongée, tel que notam-  
ment un longeron (10) ou une traverse de véhicule automo-  
bile, dans lequel doit être injecté un produit de remplissage  
tel qu'une mousse isolante, caractérisé en ce qu'il consiste  
à mettre en place dans le corps creux (10) une vessie gon-  
flable (18), à l'état dégonflé, puis à gonfler la vessie (18)  
jusqu'à ce qu'elle épouse de manière étanche le contour  
interne de la section du corps creux (10, 16) dans laquelle  
elle a été mise en place et à injecter le produit de remplis-  
sage de part/ou d'autre de ladite vessie.



FR 2 684 633 - A1



La présente invention concerne un procédé d'obturation d'un corps creux de forme générale allongée, tel que notamment un longeron ou une traverse de véhicule automobile.

5 Afin de résoudre les problèmes d'étanchéité à la poussière, au liquide, ou des problèmes d'isolation acoustique, il est parfois nécessaire d'injecter à l'intérieur de tels corps creux, un produit de remplissage tel qu'une mousse, un revêtement anti-corrosion, etc.

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Il est le plus souvent souhaitable de limiter la portion contenant du produit à une seule section longitudinale du corps creux.

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Il est également parfois nécessaire lorsque le corps creux est ouvert à ses deux extrémités longitudinales, comme dans le cas d'un longeron de véhicule automobile, de limiter la quantité du produit injecté en prévoyant une obturation des extrémités.

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Selon les techniques connues, les moyens d'obturation des corps creux sont généralement des bouchons ou des cloisons intermédiaires soudées dans le corps creux.

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La fixation de telles pièces dans le corps creux est complexe et notamment du fait des problèmes d'accessibilité. Les temps et les coûts de fabrication des corps creux s'en trouvent augmentés de manière importante.

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Afin de remédier à ces inconvénients, l'invention propose un procédé d'obturation caractérisé en ce qu'il consiste à mettre en place dans le corps creux une vessie gonflable, à l'état dégonflé, puis à gonfler la vessie jusqu'à ce qu'elle épouse de manière étanche le contour interne de la section du corps creux dans laquelle elle a été mise en place et à injecter ensuite le produit de remplissage de part et/ou d'autre de ladite vessie.

Selon d'autres caractéristiques de l'invention :